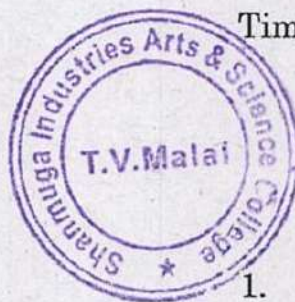


APRIL/MAY 2024

23PECH14A — ELECTROCHEMISTRY



Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define Van't Hoff factor.
2. Mention ionic activity.
3. Give a note on interfacial phenomena.
4. What is electrophoresis?
5. Make a Nernst equation.
6. Write the Cathodic currents.
7. Outline the electrode polarization.
8. Show the Evans' diagram.
9. What is cathodic stripping?
10. Define polarography.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Explain Arrhenius theory and its limitations.

Or

- (b) Note the evidence for ionic atmosphere.

12. (a) Interpret the Lippmann equation electrocapillary curves.

Or

- (b) Construct Stern models of double layer.

13. (a) Discuss about the polarizable and non-polarizable electrodes.

Or

- (b) Describe in brief about the Butler-Volmer equation.

14. (a) Write the transfer coefficients and its significance and determination.

Or

- (b) Show the reduction of I_3^- , Fe^{2+} , and dissolution of Fe to Fe^{2+} .

15. (a) Justify the principles of square wave polarography.

Or

- (b) Illustrate the classification of alkaline fuel cells and phosphoric acid fuel cells.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Summarize the Debye-Huckel Bjerrum model.

17. Explain the structure of Helmholtz — Perrin and Guoy Chapman model.

18. Elaborate the coefficient Tafel equations and Tafel plots.

19. Describe the evolution of oxygen and hydrogen at different pH.

20. Discuss the principle and limitation of polarography.